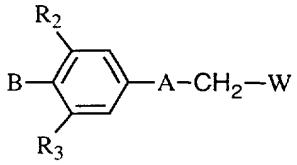
CLAIMS

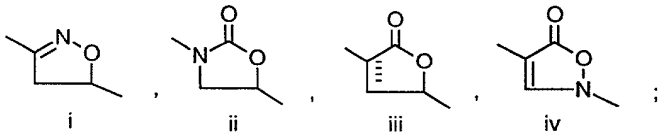
1. A compound of formula I



I

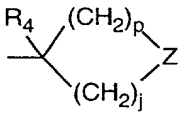
or a pharmaceutically acceptable salt thereof wherein:

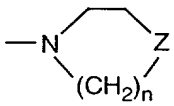
A is a structure i, ii, iii, or iv

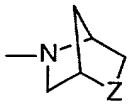


i , ii , iii , iv ;

B is

(a)  ,

(b)  , or

(c)  ;

W is NHC(=X)R_1, or -Y-het; povided that when A is a structure iv, W is not –Y-het;

X is O, or S; provided that when X is O, B is not the subsection (b).

Y is NH, O, or S;

Z is S(=O)(=N-R_5);

R_1 is

(a) H,

(b) NH_2,

(c) NHC_{1-4}alkyl,

(d) C_{1-4}alkyl,

(e) C_{2-4}alkenyl,

(f) OC_{1-4}alkyl,

(g) SC_{1-4}alkyl, or

(h) $(CH_2)_p C_{3-6}$cycloalkyl;

at each occurrence, alkyl or cycloalkyl in R_1 is optionally substituted with one or more F, Cl or CN;

R_2 and R_3 are independently H, F, Cl, methyl or ethyl;

R_4 is H, CH_3, or F;

R_5 is

(a) H,

(b) C_{1-4}alkyl,

(c) $C(=O)C_{1-4}$alkyl,

(d) $C(=O)OC_{1-4}$alkyl,

(e) $C(=O)NHR_6$, or

(f) $C(=S)NHR_6$;

R_6 is H, C_{1-4}alkyl, or phenyl;

at each occurrence, alkyl in R_5 and R_6 is optionally substituted with one or more halo, CN, NO_2, phenyl, C_{3-6} cycloalkyl, OR_7, $C(=O)R^7$, $OC(=O)R_7$, $C(=O)OR_7$, $S(=O)_mR_7$, $S(=O)_mNR_7R_7$, $NR_7SO_2R_7$, $NR_7SO_2NR_7R_7$, $NR_7C(=O)R_7$, $C(=O)NR_7R_7$, NR_7R_7, oxo, or oxime;

R_7 is H, C_{1-4}alkyl, or phenyl;

at each occurrence, phenyl is optionally substituted with one or more halo, CN, NO_2, phenyl, C_{3-6} cycloalkyl, OR_7, $C(=O)R^7$, $OC(=O)R_7$, $C(=O)OR_7$, $S(=O)_mR_7$, $S(=O)_mNR_7R_7$, $NR_7SO_2R_7$, $NR_7SO_2NR_7R_7$, $NR_7C(=O)R_7$, $C(=O)NR_7R_7$, or NR_7R_7;

het is a C-linked five- (5) membered heteroaryl ring having 1-4 heteroatoms selected from the group consisting of oxygen, sulfur, and nitrogen, or het is a C-linked six (6) membered heteroaryl ring having 1-3 nitrogen atoms;

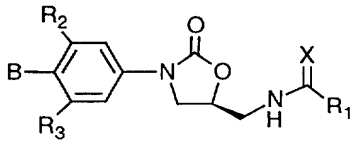
p is 0, 1, or 2;

j is 1, 2, 3, 4, or 5; provided that k and j taken together are 2, 3, 4 or 5;

m is 0, 1, or 2;

n is 2 or 3; and ----- in structure iii is either a double bond or a single bond.

2. A compound of formula I which is a compound of formula IA:



IA.

3. A compound of claim 2 wherein R_1 is C_{1-4}alkyl.

4. A compound of claim 2 wherein R_1 is ethyl.

5. A compound of claim 2 wherein R_1 is methyl.

6. A compound of claim 2 wherein R_1 is C_{3-6}cycloalkyl.

7. A compound of claim 2 wherein R_1 is cyclopropyl.

8. A compound of claim 2-7 wherein X is sulfur atom.

9. A compound of claim 2-7 wherein X oxygen atom.

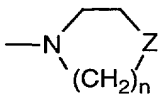
10. A compound of claim 8 wherein one of R_2 and R_3 is H, the other one is F.

11. A compound of claim 9 wherein one of R_2 and R_3 is H, the other one is F.

12. A compound of claim 8 wherein R_4 is H.

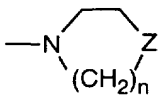
13. A compound of claim 9 wherein R_4 is H.

14. A compound of claim 8 wherein structure B is



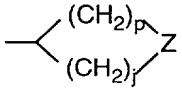
wherein Z is $S(=O)(=NR_5)$.

15. A compound of claim 9 wherein structure B is



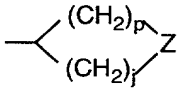
wherein Z is $S(=O)(=NR_5)$.

16. A compound of claim 8 wherein structure B is



wherein Z is $S(=O)(=NR_5)$

17. A compound of claim 8 wherein structure B is



wherein Z is $S(=O)(=NR_5)$.

18. A compound of claim 14-17 wherein R_5 is H.

19. A compound of claim 14-17 wherein R_5 is C_{1-4}alkyl, optionally substituted with OH; or C_{1-4}alkyl substituted with $C(=O)NHC_{1-4}$alkyl, $C(=O)NH_2$ or phenyl; wherein the phenyl is optionally substituted with OH, methyl, NO_2, CF_3, or CN.

20. A compound of claim 20 wherein R_5 is CH_3, or ethyl.

21. A compound of claim 20 wherein R_5 is C_{1-4}alkyl substituted with phenyl wherein the phenyl is optionally substituted with NO_2.

22. A compound of claim 14-17 wherein R_5 is $C(=O)C_{1-4}$alkyl, $C(=O)OC_{1-4}$alkyl, $C(=O)NH_2$, or $C(=O)NHC_{1-4}$alkyl.

23. A compound of claim 22 wherein R_5 is $C(=O)NHCH_3$, or $C(=O)NHCH_2CH_3$.

24. A compound of claim 14-17 wherein R_5 is $C(=O)CH_3$.

25. A compound of claim 14-17 wherein R_5 is $C(=O)OCH_3$.

26. A compound of claim 2 which is

(1) N-({(5*S*)-3-[3-fluoro-4-(1-imino-1-oxido-1λ^4, 4-thiazinan-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)ethanethioamide;

(2) N-({(5*S*)-3-[3-fluoro-4-(1-imino-1-oxido-1λ^4, 4-thiazinan-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide;

(3) N-({(5*S*)-3-[3-fluoro-4-(1-imino-1-oxido-1λ^4, 4-thiazinan-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)cyclopropanecarbothioamide;

(4) N-({(5*S*)-3-[3-fluoro-4-(1-imino-1-oxidohexahydro-1λ^4-thiopyran-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)acetamide (E)-isomer;

(5) N-({(5*S*)-3-[3-fluoro-4-(1-imino-1-oxidohexahydro-1λ^4-thiopyran-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)ethanethioamide (E)-isomer;

(6) N-({(5*S*)-3-[3-fluoro-4-(1-imino-1-oxidohexahydro-1λ^4-thiopyran-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide (E)-isomer;

(7) N-({(5*S*)-3-[3-fluoro-4-(1-imino-1-oxidohexahydro-1λ^4-thiopyran-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)cyclopropanecarbothioamide (E)-isomer;

(8) N-({(5*S*)-3-[3-fluoro-4-(1-imino-1-oxidohexahydro-1λ^4-thiopyran-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)acetamide (Z)-isomer;

(9) N-({(5*S*)-3-[3-fluoro-4-(1-imino-1-oxidohexahydro-1λ^4-thiopyran-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)ethanethioamide (Z)-isomer;

(10) N-({(5*S*)-3-[3-fluoro-4-(1-imino-1-oxidohexahydro-1λ^4-thiopyran-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide (Z)-isomer;

(11) N-({(5*S*)-3-[3-fluoro-4-(1-imino-1-oxidohexahydro-1λ^4-thiopyran-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)cyclopropanethioamide (Z)-isomer;

(12) N-({(5*S*)-3-[3-fluoro-4-[1-(acetylimino)-1-oxidohexahydro-1λ^4-thiopyran-4-yl]phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)acetamide, *Z*-isomer;

(13) N-({(5*S*)-3-[3-fluoro-4-[1-(methylimino)-1-oxidohexahydro-1λ^4-thiopyran-4-yl]phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide, *Z*-isomer;

(14) N-({(5*S*)-3-[3-fluoro-4-[1-(acetylimino)-1-oxidohexahydro-1λ^4-thiopyran-4-yl]phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide, *Z*-isomer;

(15) N-({(5*S*)-3-[3-fluoro-4-[1-(ethylimino)-1-oxidohexahydro-1λ^4-thiopyran-4-yl]phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide, *Z*-isomer;

(16) N-({(5*S*)-3-[3-fluoro-4-[1-[(phenylmethyl)imino]-1-oxidohexahydro-1λ^4-thiopyran-4-yl]phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide, *Z*-isomer;

(17) N-({(5*S*)-3-[3-fluoro-4-[1-[(3-phenylpropyl)imino]-1-oxidohexahydro-1λ^4-thiopyran-4-yl]phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide, *Z*-isomer;

(18) N-({(5*S*)-3-[3-fluoro-4-(1-{[(methylamino)carbonyl]imino}-1-oxidohexahydro-1λ^4-thiopyran-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide, *Z*-isomer;

(19) N-({(5*S*)-3-[3-fluoro-4-(1-[(methoxycarbonyl)imino]-1-oxidohexahydro-1λ^4-thiopyran-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide, *Z*-isomer;

(20) N-({(5*S*)-3-[3-fluoro-4-(1-[[(ethoxycarbonyl)methyl]imino]-1-oxidohexahydro-1λ^4-thiopyran-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide, *Z*-isomer;

(21) N-({(5*S*)-3-[3-fluoro-4-(1-{[[(4-nitrophenyl)amino]carbonyl]imino}-1-oxidohexahydro-1λ^4-thiopyran-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide, *Z*-isomer ;

(22) N-({(5*S*)-3-[3-fluoro-4-[1-[(aminocarbonyl)imino]-1-oxidohexahydro-1λ^4-thiopyran-4-yl]phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide, *Z*-isomer;

(23) N-({(5*S*)-3-[3-fluoro-4-[1-[[(aminocarbonyl)methyl]imino]-1-oxidohexahydro-1λ^4-thiopyran-4-yl]phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide, *Z*-isomer;

(24) N-({(5*S*)-3-[3-fluoro-4-[1-[(2-hydroxyethyl)imino]-1-oxidohexahydro-1λ^4-thiopyran-4-yl]phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide, *Z*-isomer;

(25) N-[((5*S*)-3-{3-fluoro-4-[1-(methylimino)-1-oxido-1λ^4, 4-thiazinan-4-yl]phenyl}-2-oxo-1,3-oxazolidin-5-yl)methyl]propanethioamide;

(26) N-[((5*S*)-3-{3-fluoro-4-[1-(methylimino)-1-oxido-1λ^4, 4-thiazinan-4-yl]phenyl}-2-oxo-1,3-oxazolidin-5-yl)methyl]cyclopropanecarbothioamide;

(27) N-[((5*S*)-3-{3-fluoro-4-(1-[(methoxycarbonyl)imino]-1-oxido-1λ^4, 4-thiazinan-4-yl)phenyl}-2-oxo-1,3-oxazolidin-5-yl)methyl]propanethioamide;

(28) N-[((5*S*)-3-{3-fluoro-4-(1-[(methoxycarbonyl)imino]-1-oxido-1λ^4, 4-thiazinan-4-yl)phenyl}-2-oxo-1,3-oxazolidin-5-yl)methyl]cyclopropanecarbothioamide ;

(29) N-({(5*S*)-3-[3-fluoro-4-[1-(methylimino)-1-oxidohexahydro-1λ^4-thiopyran-4-yl]phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)cyclopropanecarbothioamide, *Z*-isomer;

(30) N-[((5*S*)-3-{3-fluoro-4-[1-[(methoxycarbonyl)imino]-1-oxidohexahydro-1λ^4-thiopyran-4-yl]phenyl}-2-oxo-1,3-oxazolidin-5-yl)methyl]cyclopropanecarbothioamide, *Z*-isomer;

(31) N-[((5*S*)-3-{3-fluoro-4-[1-(methylimino)-1-oxidohexahydro-1λ^4-thiopyran-4-yl]phenyl}-2-oxo-1,3-oxazolidin-5-yl)methyl]cyclopropanecarbothioamide, *E*-isomer;

(32) N-[((5*S*)-3-{3-fluoro-4-[1-(methylimino)-1-oxidohexahydro-1λ^4-thiopyran-4-yl]phenyl}-2-oxo-1,3-oxazolidin-5-yl)methyl]propanethioamide, *E*-isomer;

(33) N-[((5*S*)-3-{3-fluoro-4-[1-[[(phenylmethoxy)carbnonyl]imino]-1-oxidohexahydro-1λ^4-thiopyran-4-yl]phenyl}-2-oxo-1,3-oxazolidin-5-yl)methyl]acetamide, *Z*-isomer; or

(34) N-({(5*S*)-3-[3-Fluoro-4-(1-{[(benzylamino)carbonyl]imino}-1-oxidohexahydro-1λ^4-thiopyran-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)acetamide, *Z*-isomer.

27. A compound of claim 2 which is

(1) N-({(5*S*)-3-[3-fluoro-4-(1-imino-1-oxido-1λ^4, 4-thiazinan-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)ethanethioamide;

(2) N-({(5*S*)-3-[3-fluoro-4-(1-imino-1-oxido-1λ^4, 4-thiazinan-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide;

(3) N-({(5*S*)-3-[3-fluoro-4-(1-imino-1-oxido-1λ^4, 4-thiazinan-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)cyclopropanecarbothioamide;

(4) N-({(5*S*)-3-[3-fluoro-4-(1-imino-1-oxidohexahydro-1λ^4-thiopyran-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)ethanethioamide (Z)-isomer;

(5) N-({(5*S*)-3-[3-fluoro-4-(1-imino-1-oxidohexahydro-1λ^4-thiopyran-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide (Z)-isomer; or

(6) N-({(5*S*)-3-[3-fluoro-4-(1-imino-1-oxidohexahydro-1λ^4-thiopyran-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)cyclopropanethioamide (Z)-isomer.

28. A compound of claim 2 which is

(1) N-({(5*S*)-3-[3-fluoro-4-[1-(methylimino)-1-oxidohexahydro-1λ^4-thiopyran-4-yl]phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide, *Z*-isomer;

(2) N-({(5*S*)-3-[3-fluoro-4-[1-(acetylimino)-1-oxidohexahydro-1λ^4-thiopyran-4-yl]phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide, *Z*-isomer;

(3) N-({(5*S*)-3-[3-fluoro-4-(1-[(methoxycarbonyl)imino]-1-oxidohexahydro-1λ^4-thiopyran-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide, *Z*-isomer;

(4) N-({(5*S*)-3-[3-Fluoro-4-(1-{[[(4-nitrophenyl)amino]carbonyl]imino}-1-oxidohexahydro-1λ^4-thiopyran-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide, *Z*-isomer ;

(5) N-({(5*S*)-3-[3-fluoro-4-[1-(methylimino)-1-oxidohexahydro-1λ^4-thiopyran-4-yl]phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)cyclopropanecarbothioamide, *Z*-isomer; or

(6) N-[((5*S*)-3-{3-fluoro-4-[1-[(methoxycarbonyl)imino]-1-oxidohexahydro-1λ^4-thiopyran-4-yl]phenyl}-2-oxo-1,3-oxazolidin-5-yl)methyl]cyclopropanecarbothioamide, *Z*-isomer.

29. A compund of claim 2 which is

(1) N-({(5*S*)-3-[3-Fluoro-4-[1-(methylimino)-1-oxidohexahydro-1λ^4-thiopyran-4-yl]phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide, *Z*-isomer;

(2) N-({(5*S*)-3-[3-Fluoro-4-[1-(ethylimino)-1-oxidohexahydro-1λ^4-thiopyran-4-yl]phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide, *Z*-isomer;

(3) N-({(5*S*)-3-[3-Fluoro-4-(1-{[(methylamino)carbonyl]imino}-1-oxidohexahydro-1λ^4-thiopyran-4-yl)phenyl]-2-oxo-1,3-oxazolidin-5-yl}methyl)propanethioamide, *Z*-isomer;

(4) N-[((5*S*)-3-{3-Fluoro-4-[1-(methylimino)-1-oxido-1λ^4,4-thiazinan-4-yl]phenyl}-2-oxo-1,3-oxazolidin-5-yl)methyl]propanethioamide; or

(5) N-[((5*S*)-3-{3-Fluoro-4-[1-(methylimino)-1-oxido-1λ^4,4-thiazinan-4-yl]phenyl}-2-oxo-1,3-oxazolidin-5-yl)methyl]cyclopropanecarbothioamide.

30. A method for treating microbial infections comprising: administering to a mammal in need thereof an effective amount of a compound of formula I as shown in claim 1.

31. The method of claim 30 wherein said compound of formula I is administered orally, parenterally, transdermally, or topically in a pharmaceutical composition.

32. The method of claim 30 wherein said compound is administered in an amount of from about 0.1 to about 100 mg/kg of body weight/day.

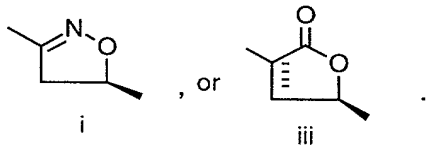
33. The method of claim 30 wherein said compound is administered in an amount of from about 1 to about 50 mg/kg of body weight/day.

34. A method for treating microbial infections of claim 30 wherein the infection is skin infection.

35. A method for treating microbial infections of claim 30 wherein the infection is eye infection.

36. A pharmaceutical composition comprising a compound of claim 1 and a pharmaceutically acceptable carrier.

37. A compound of claim 1 wherein structure i, or iii is



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